

**DEVELOPING A PC-BASED COMMUNICATIONS SYSTEM USING TAPI AND
VISUAL BASIC**

BY:

CEZAR ALLAN AURELIO

CHRISTOPHER LAYNO

RODOLFO RYAN MAGALLEN

**COLLEGE OF ARTS AND SCIENCES
ATENEO DE DAVAO UNIVERSITY**

March 2001

**DEVELOPING A PC-BASED COMMUNICATIONS SYSTEM USING TAPI AND
VISUAL BASIC**

A Mini-Thesis

Presented to

The Faculty of the Computer Science Department

Ateneo de Davao University

In Partial Fulfillment

Of the Requirements for the Degree

Bachelor of Science

By

Cezar Allan Aurelio

Christopher Layno

Rodolfo Ryan Magallen

March 2001

ABSTRACT

This study aimed to develop an efficient PC-based communications system that will address the concerns of business-minded people, and active modem users as well when it comes to interacting with other people. The study aimed to achieve this objective by having a prototype program as a technical output that combines the functionalities of standard and advanced communication devices, as well as the standard and advanced telephone services being offered by Telephony Service Providers, or TSPs. The prototype program was created utilizing TAPI (Telephony Application Programming Interface) technology, with an add-in made by the proponents on this technology and improvements on some of the telephone services as well. Significantly, this study also aimed to find out if the prototype program could *fully* support the Caller ID service even without subscribing for such service from any TSP.

The standard and advanced communication devices integrated for the prototype program were the Answering Machine, Fax Machine and of course, the ubiquitous Telephone. The fax machine aspect of the prototype program however, only succeeds on the sending end. As for the standard and advanced telephone services supported, these were Speed Dial and Caller ID, with the latter containing Audio Information about the caller. However, it was found out that Caller ID is not fully supported without subscribing for such service from a TSP. The prototype program also supports Ringer Tones, a prevalent cellular phone feature. Because of this feature, there was a conflict with the Audio Information feature of Caller ID and was only resolved by bypassing this feature if Caller ID information is present. Lastly, a Phone Book was integrated with the prototype program for functional and aesthetic purposes.

TABLE OF CONTENTS

	Page
Acknowledgement.....	v
Abstract.....	vi
List of Figures.....	ix
List of Tables.....	x
Chapter	
I. Introduction.....	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem.....	2
1.3 Objectives of the Study.....	2
1.4 Significance of the Study.....	3
1.5 Scope and Limitation.....	3
II. Research Design and Methodology.....	4
III. Review of Related Literature.....	6
IV. Theoretical Background.....	11
4.1 Telephone Services.....	11
4.1.1 Caller ID.....	11
4.1.2 Do Not Disturb (Answering Machine).....	11
4.1.3 Facsimile.....	12
4.1.4 Speed Dial.....	12

CHAPTER I

INTRODUCTION

1.1 Background of the Study

In the advent of digital age, efficient electronic communications system is regarded as a necessity. Both personal and corporate users are trying to obtain the technology that would make connectivity better and faster. Most of today's growing businesses rely heavily on their communications system to initiate transactions. However, acquiring an efficient communications system can be too costly that personal and small-scale business cannot afford such systems. In a PC environment, commercial communications software is very expensive and those that are free tend to be incomplete in terms of supported services, not user-friendly or hardware-dependent. Most of these systems use modem commands that are specific to a certain modem. When ported to other PC having different modem specifications, hardware compatibility issues arises.

With these in mind, the proponents came up with a proposal to develop an approach that would eliminate the problems presented by creating an efficient modem-based communications system for the PC environment. The proponents wanted to integrate most of the Windows Telephony services using TAPI technology, and further enhance this technology by providing other functions necessary for full integration to be realized. The proponents wanted to provide an add-in to TAPI technology because they wanted to send faxes and play and record messages over the phone without using Windows' MAPI (Messaging API) and SAPI (Speech API) since all of the Windows operating systems are not pre-installed with these API functions. Aside from this, this would also allow the modem then to be utilized more effectively even without a connection to the Internet. In this country, free Internet is not yet supported and subscription costs can be expensive. In addition, current Internet phone software lacks support for some telephone services such as and Fax/Answering Machine support.

1.2 Statement of the Problem

The study focused on how to develop a PC-based communications system that works efficiently especially in a local exchange setting. Moreover, the system should still provide a complete, portable and efficient service for the users. The supported services must add to the convenience of the users compared with the current systems available.

The sub problems included the following:

1. How to support the basic device and advanced services of a Telephony Service Provider, or TSP, such as the Telephone, Speed Dial, Ringer Tones, and Caller ID
2. How to develop an application that facilitates the sending of fax and the answering machine capability using TAPI technology only
3. How to determine if the Caller ID feature can be fully supported even without a subscription from the telephone company
4. How to integrate all the services stated above into a single, efficient, portable, and user-friendly application

1.3 Objectives of the Study

This study aimed to address the problems and concerns of active modem users when it comes to support for telecommunications services through the design and implementation of a portable and efficient prototype communications system. Specifically, it aimed to:

1. Develop software that would support the basic device and advanced services of a TSP in a PC environment
2. Build a program that would enable a computer (through the voice fax modem) to send fax documents and provide answering machine capability by improving on the TAPI technology
3. Determine if the Caller ID feature can be fully supported even without a subscription from the telephone company
4. Provide users with a portable and integrated communications system that can be customized for their preferences

1.4 Significance of the Study

The study is considered significant since the resulting prototype will serve as an alternative for modem users when subscription costs for most of the telecommunications services are considered. The study also developed a system that would try to eliminate hardware-dependent commands used in most modem programs. Using an approach that would avoid hardware commands, the proponents utilized and improved the TAPI technology provided by Windows so that the resulting prototype will make most of the telephone services to be more efficient and portable. The study also provided additional convenience to the users in terms of some features added. An example would be the Audio Information added to the Caller ID service so that users will be able to know who's calling not just from a glance but also from a distance.

1.5 Scope and Limitation

The proponents intended to focus on incorporating basic/advanced communication devices in the prototype. Among the communication devices, the proponents planned to make a prototype that will provide capabilities similar to the following: answering/fax machine and phone dialer. Aside from that, the proponents also intended to incorporate a phone book in the prototype program.

On the other hand, the proponents also intended to incorporate support for basic and advanced telephone services/features in the prototype. The telephone services/features that the proponents supported are limited to the following: Speed Dial, and Caller ID, with the latter being integrated with Audio Information about the caller. The proponents also planned to add support for Ringer Tones, which is supposedly a feature prevalent in cellular phones.

This project will be limited to using Visual Basic 6.0 as the main platform in developing the prototype program and the add-in for TAPI technology. Lastly, the only clear constraint that the proponents saw in completing the study is time, given the fact that there were only barely two months to finish the prototype. As for other matters, the proponents did not foresee any problems.